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1981

Capital Investments of the World Petroleum Industry

by **Richard S. Dobias,** *Second Vice President*
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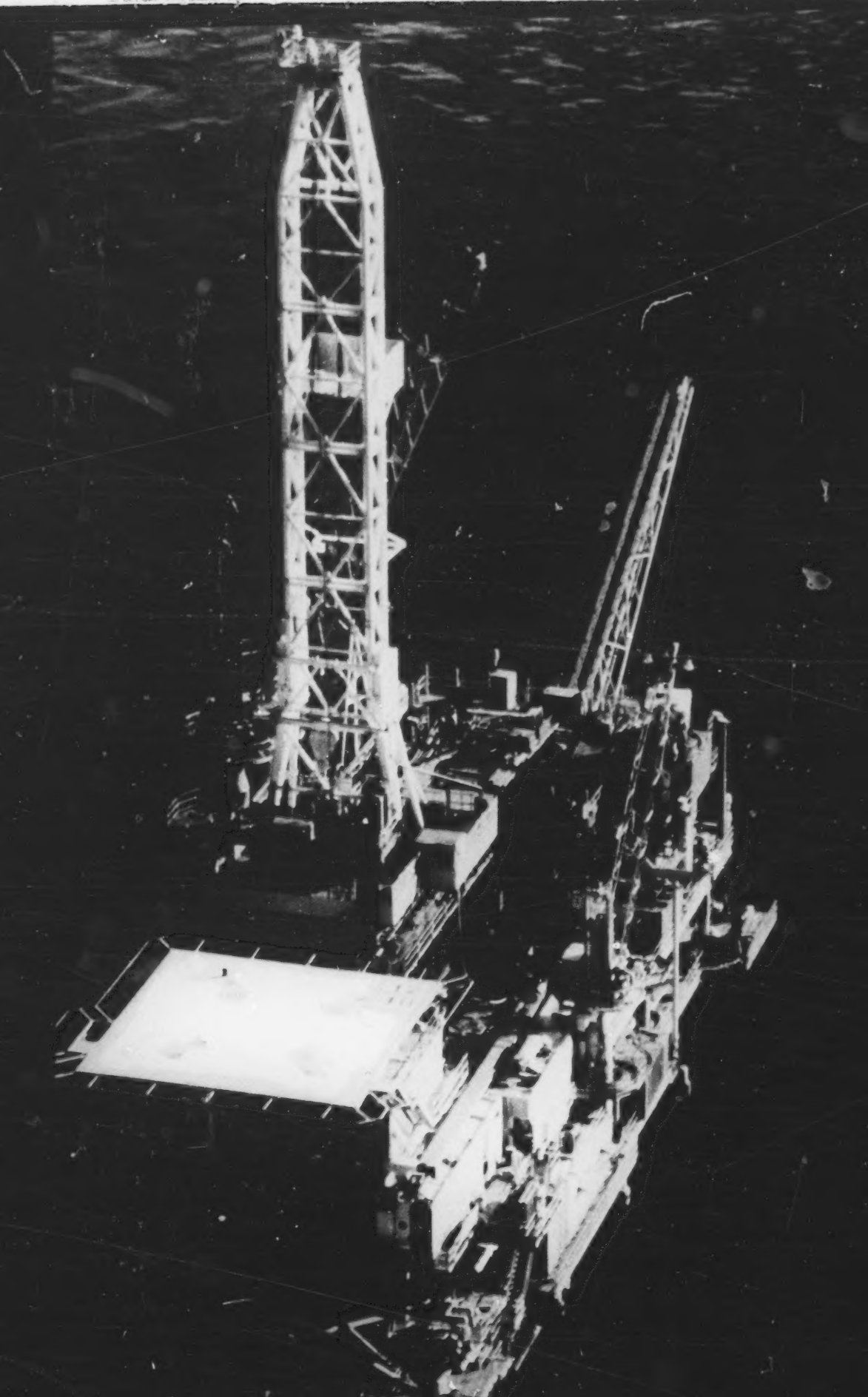
Energy Economics Division



FOREWORD

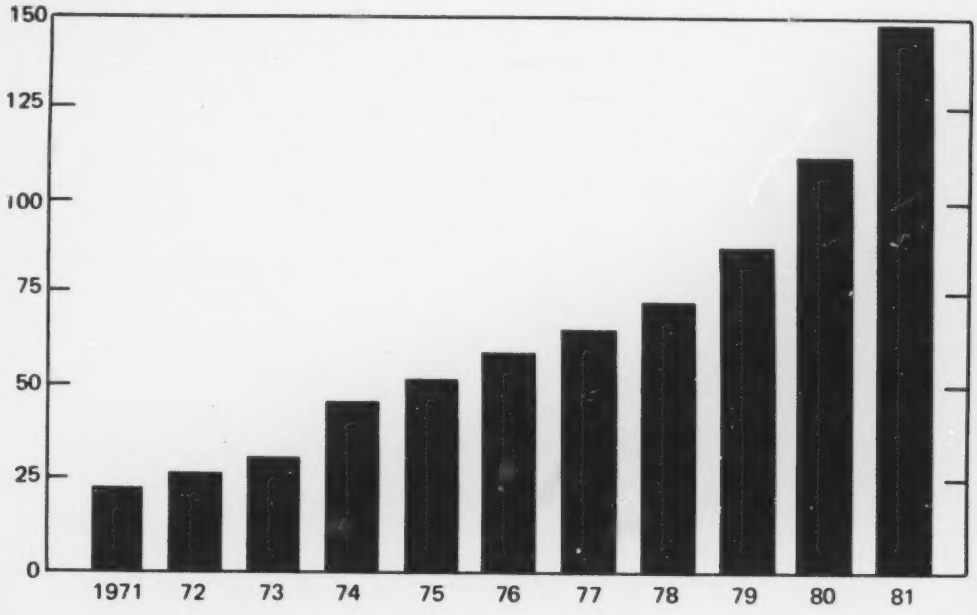
For many years the Energy Economics Division of The Chase Manhattan Bank has conducted a continuous and detailed study of the financial performance of a large number of petroleum companies. The combined operations of these organizations constitute a major proportion of the worldwide activities of the petroleum industry, and their financial performance, therefore, is a significant indication of the probable performance of the overall industry.

Additional data have been obtained from surveys of a great many investor and other government-owned operating entities, and the sum of all the information gained has provided a base from which we have derived a reliable estimate of the worldwide capital investments of the petroleum industry.

CAPITAL AND EXPLORATION EXPENDITURES

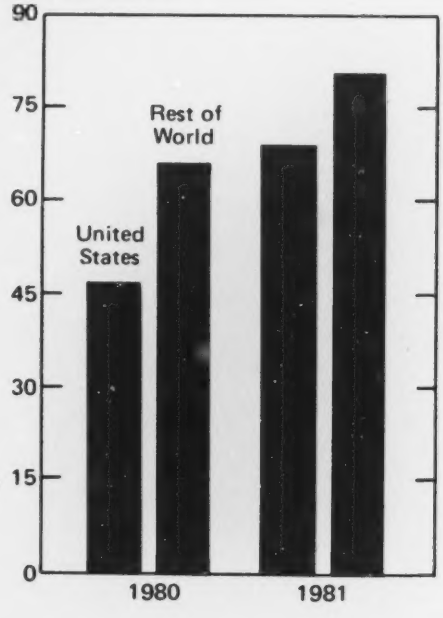
Worldwide

billions of dollars



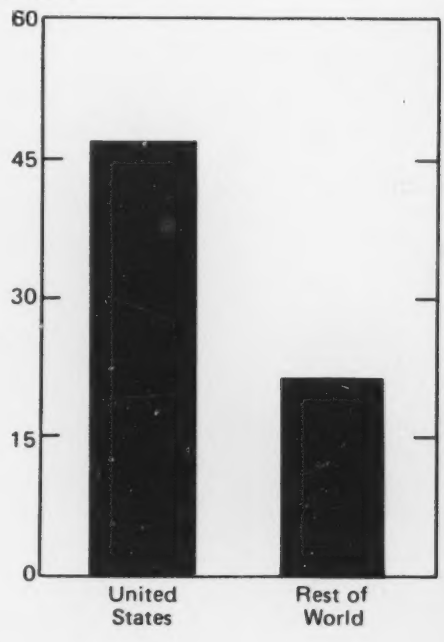
United States and Rest of World

billions of dollars



Change from 1980

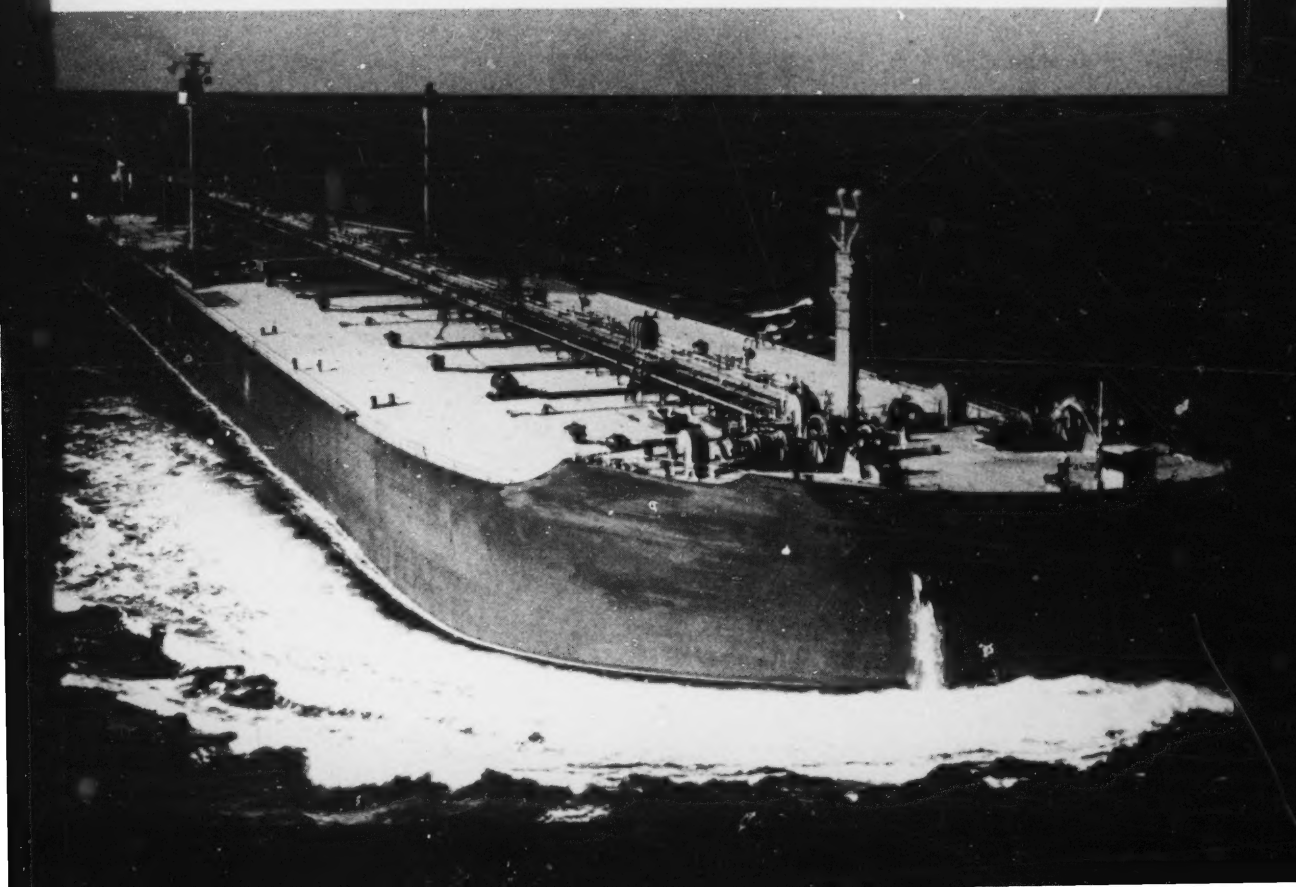
percent



Highlights of CAPITAL EXPENDITURES IN 1981

Worldwide Capital and Exploration Expenditures

- The petroleum industry in the non-Communist world spent $149.2 billion for capital and exploration purposes in 1981 and registered an unprecedented year-to-year increase of $36.1 billion. This gain far exceeds the record-setting gains of $26.2 billion and $14.5 billion recorded in the two immediately preceding years of 1980 and 1979. The extraordinarily large growth in capital and exploration expenditures in recent years has been prompted primarily by higher prices worldwide for crude oil and natural gas. Outlays in the United States rose to $68.7 billion in 1981, 47 percent more than in the prior year, while expenditures in the rest of the world increased by a substantial 21 percent over 1980 to $80.5 billion. Expenditures increased in all major areas of the non-Communist world except in Western Europe, where they declined by 2 percent to $19.0 billion.



Geographic Breakdown

- Except for the slight decrease in Western Europe, all the other geographic areas registered capital expenditure gains in 1981. These gains ranged from a low of 7 percent in Canada to a high of 54 percent in Africa. Western Europe remained the second largest area of investment by the petroleum industry, after the United States. The Middle East and Far East followed at $14.6 billion and $11.1 billion, respectively.

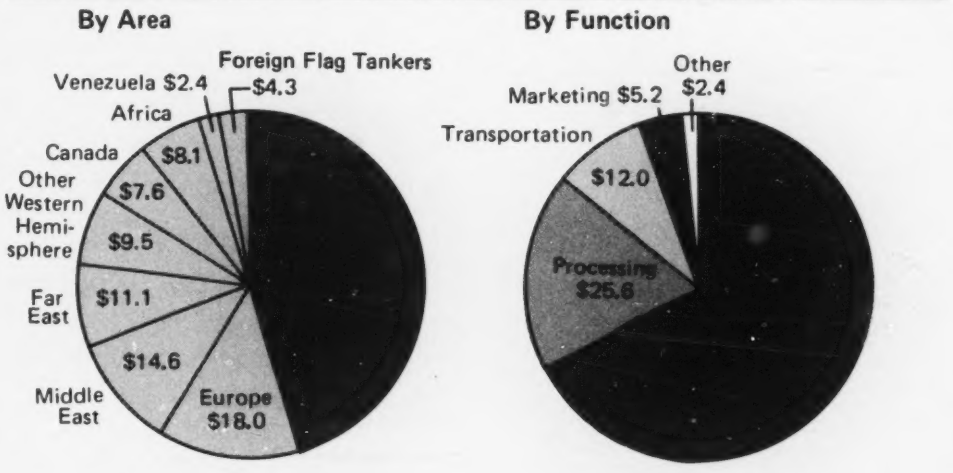
- Petroleum industry capital investments in the United States during 1981 represented 45.5 percent of the worldwide total, the highest proportion since 1968.

All Functions

- The expenditure in 1981 for each major functional category recorded a gain over the prior year. Increases extended from a modest 3 percent for mar-

WORLDWIDE CAPITAL EXPENDITURES – 1981

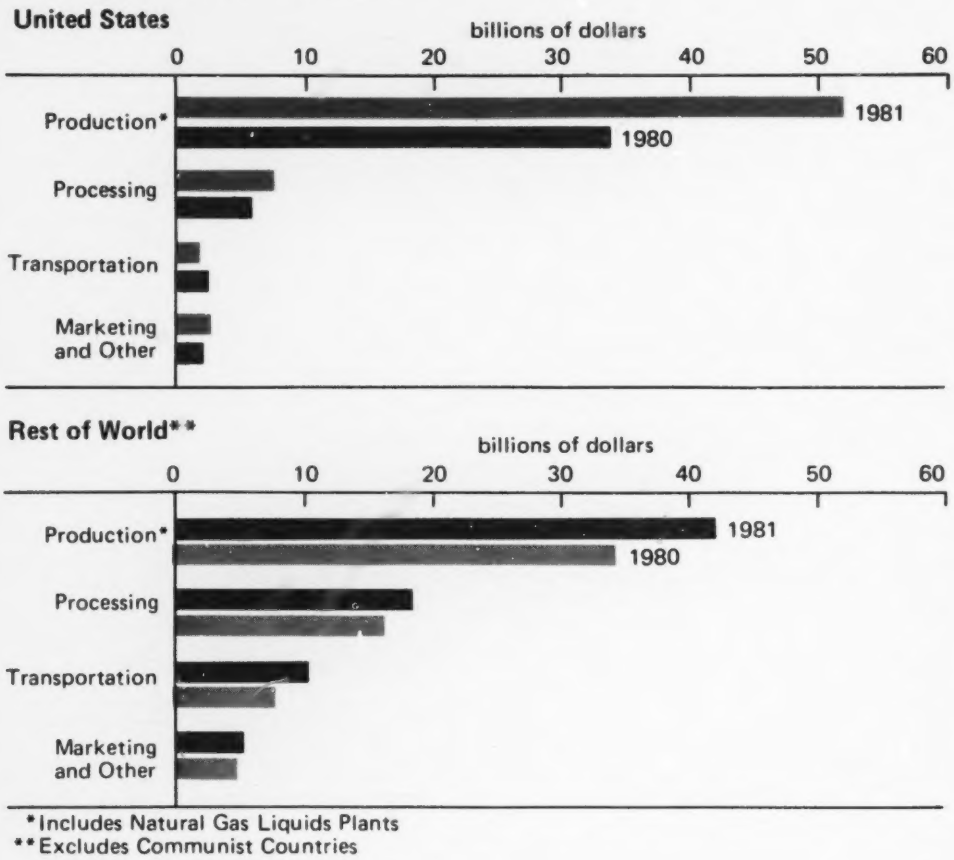
billions of dollars



TOTAL $138.6

*Includes Natural Gas Liquids Plants

WORLDWIDE CAPITAL EXPENDITURES
BREAKDOWN BY FUNCTION – 1981 VS. 1980

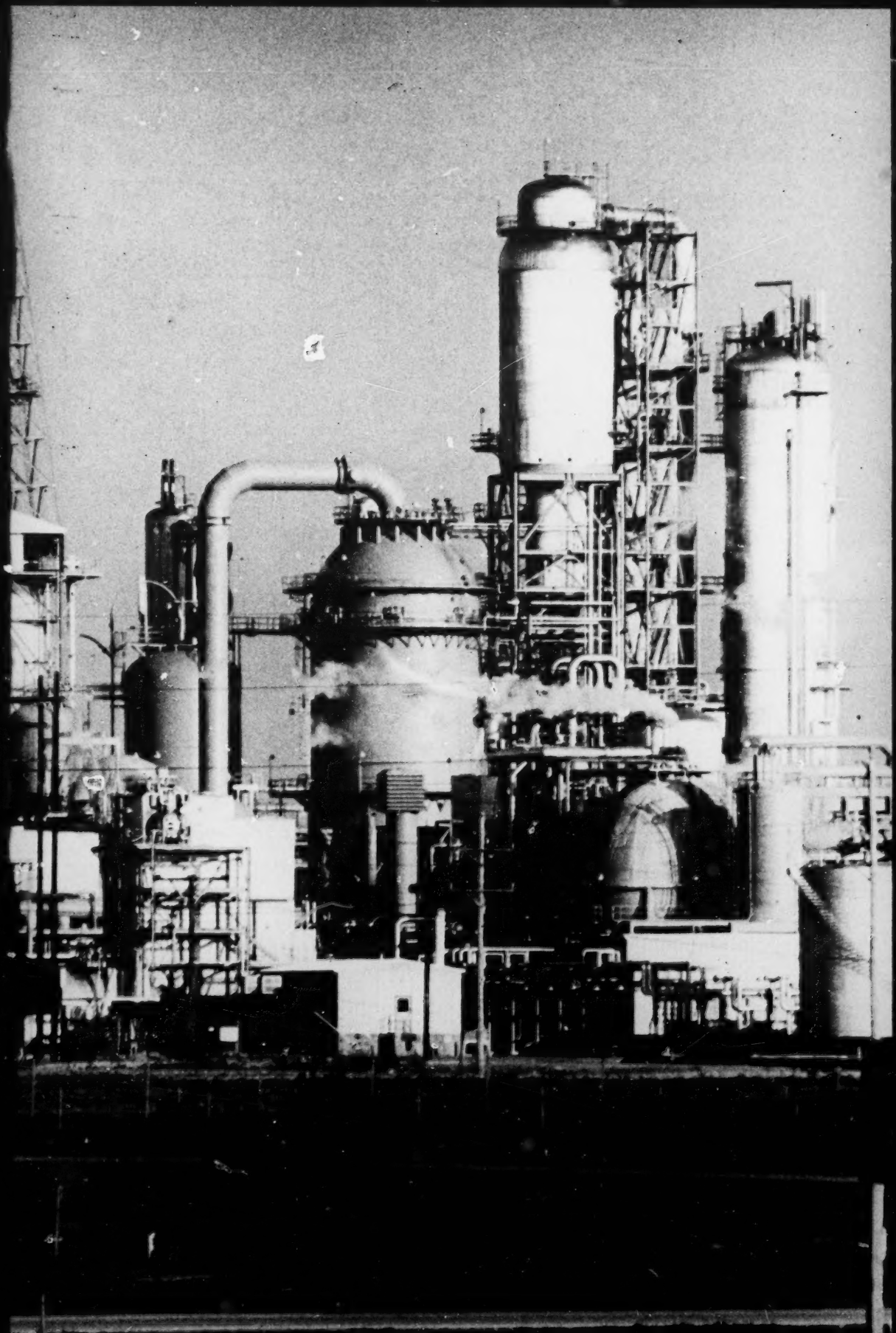


*Includes Natural Gas Liquids Plants
**Excludes Communist Countries

keting to nearly 40 percent for the production segment.

- Capitalized expenditures for production purposes once again far outpaced the downstream investments, rising to 67 percent of the entire sum from 63 percent a year earlier. Outlays for processing facilities such as refineries and chemical plants accounted for 19 percent; followed by 9 percent for transportation (pipelines and tankers), and 5 percent for marketing and miscellaneous other needs.

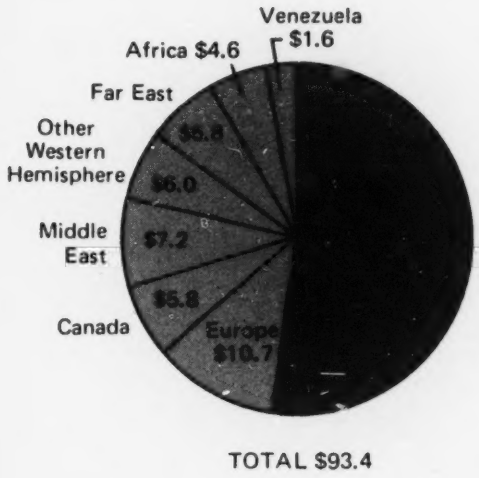
- Within the United States, capitalized outlays for transportation facilities declined a sharp 20 percent because of lower pipeline expenditures.



CAPITAL EXPENDITURES – PRODUCTION

Year 1981

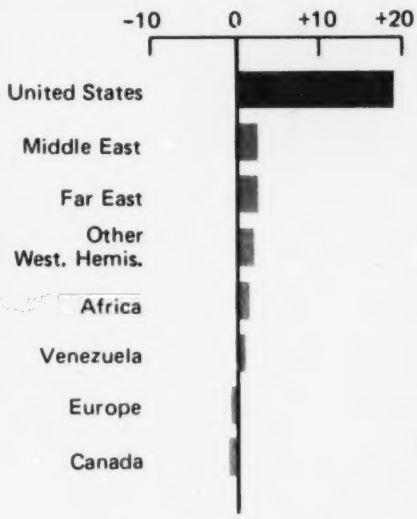
billions of dollars



TOTAL $93.4

Change from 1980

billions of dollars



Production

- Over 70 percent of the total increase in production expenditures during 1981 occurred in the United States, as removal of crude oil price controls in January of 1981 sharply increased expected profitability.

- Capital expenditures in production as a percent of total capital expenditures ranged from a low of 49 percent in the Middle East to a high of 82 percent in the United States.

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Photographs used in this report were furnished through the courtesy of Exxon Corporation, Mobil Oil Corp. and Texaco Inc.

SCHEDULE 1 CAPITAL AND EXPLORATION EXPENDITURES Year 1981

	United States	Canada	Venezuela
	Million Dollars		
Crude Oil and Natural Gas	50,775	5,575	1,450
Natural Gas Liquids Plants	925	200	200
Total Production	51,700	5,775	1,650
Pipe Lines	1,025	175	25
Tankers	700	0	0
Refineries	4,600	625	600
Chemical Plants	2,650	475	50
Marketing	1,425	275	75
Other	900	250	50
Total Capital Expenditures	63,000	7,575	2,450
Geological & Geophysical Expense and Lease Rentals	5,700	925	450
CAPITAL & EXPLORATION EXPENDITURES	68,700	8,500	2,900

SCHEDULE 2 GROSS INVESTMENT IN FIXED ASSETS December 31, 1981

Crude Oil and Natural Gas	173,200	28,025	8,900
Natural Gas Liquids Plants	6,575	2,350	550
Total Production	179,775	30,375	9,450
Pipe Lines	21,350	2,295	640
Tankers	4,525	0	0
Refineries	31,175	5,050	2,625
Chemical Plants	22,925	1,400	85
Marketing	16,125	2,950	325
Other	5,775	1,075	275
TOTAL GROSS INVESTMENT	281,650	43,145	13,400

SCHEDULE 3 NET INVESTMENT IN FIXED ASSETS December 31, 1981

Crude Oil and Natural Gas	124,820	24,035	3,865
Natural Gas Liquids Plants	3,285	1,575	335
Total Production	128,105	25,610	4,200
Pipe Lines	14,350	1,205	125
Tankers	2,770	0	0
Refineries	16,400	2,825	1,685
Chemical Plants	12,300	1,015	85
Marketing	7,430	1,555	195
Other	3,295	915	225
TOTAL NET INVESTMENT	184,650	33,125	6,515

Other Western Hemisphere	Western Europe	Africa	Middle East	Far East	Unallocated	Free World
			Million Dollars			
5,250	10,300	3,450	3,500	5,100	0	85,400
700	400	1,200	3,700	650	0	7,975
5,950	10,700	4,650	7,200	5,750	0	93,375
725	750	1,250	2,500	625	0	7,075
0	0	0	0	0	4,250	4,950
1,175	3,075	1,125	3,125	2,850	0	17,175
1,150	1,250	725	1,350	750	0	8.400
300	1,850	275	200	800	0	5,200
225	325	75	250	350	0	2,425
9,525	17,950	8,100	14,625	11,125	4,250	138,600
600	1,025	800	250	850	0	10,600
10,125	18,975	8,900	14,875	11,975	4,250	149,200
20,325	48,450	13,100	18,175	14,975	0	325,150
2,200	2,000	5,650	11,500	4,300	0	35,125
22,525	50,450	18,750	29,675	19,275	0	360,275
8,250	8,350	5,775	13,025	3,400	0	63,085
0	0	0	0	0	59,225	63,750
13,175	34,675	6,675	14,025	24,650	0	132,050
7,475	17,425	2,650	6,550	3,900	0	62,410
3,175	19,125	2,675	1,050	7,950	0	53,375
1,525	2,950	600	1,825	1,875	0	15,900
56,125	132,975	37,125	66,150	61,050	59,225	750,845
14,320	43,600	10,185	11,315	12,210	0	244,350
1,800	1,660	4,720	10,470	3,595	0	27,440
16,120	45,260	14,905	21,785	15,805	0	271,790
5,920	5,970	4,190	10,155	2,720	0	44,635
0	0	0	0	0	46,775	49,545
8,810	19,015	5,080	11,240	15,305	0	80,360
6,040	11,250	2,440	5,930	2,730	0	41,790
1,025	7,265	985	425	3,755	0	22,635
1,195	2,370	435	1,185	1,545	0	11,165
39,110	91,130	28,035	50,720	41,860	46,775	521,920

SCHEDULE 4 CAPITAL AND EXPLORATION EXPENDITURES

	1971	1972	1973	1974
		Million Dollars		
WORLD				
Crude Oil and Natural Gas	6,520	9,590	12,415	18,765
Natural Gas Liquids Plants	695	515	510	770
Pipe Lines	1,200	1,230	1,230	2,460
Tankers	2,875	3,775	6,550	8,900
Refineries	4,755	4,955	4,865	7,720
Chemical Plants	1,535	1,350	1,175	1,995
Marketing	3,380	2,825	2,480	2,215
Other	840	710	770	875
Total Capital Expenditures	21,800	24,950	29,995	43,700
Geological & Geophysical Expense and Lease Rentals	1,395	1,540	1,700	2,185
COMBINED	23,195	26,490	31,695	45,885
UNITED STATES				
Crude Oil and Natural Gas	3,185	5,740	7,290	11,225
Natural Gas Liquids Plants	200	175	150	225
Pipe Lines	550	300	450	1,400
Tankers	125	125	100	200
Refineries	1,050	900	1,050	1,775
Chemical Plants	500	450	425	825
Marketing	1,350	1,100	850	650
Other	290	260	325	325
Total Capital Expenditures	7,250	9,050	10,640	16,625
Geological & Geophysical Expense and Lease Rentals	715	740	850	1,130
COMBINED	7,965	9,790	11,490	17,755
CANADA				
Crude Oil and Natural Gas	725	850	1,000	1,150
Natural Gas Liquids Plants	150	100	75	150
Pipe Lines	75	60	80	75
Refineries	210	325	290	400
Chemical Plants	15	10	15	30
Marketing	150	150	155	190
Other	20	30	35	80
Total Capital Expenditures	1,345	1,525	1,650	2,075
Geological & Geophysical Expense and Lease Rentals	150	150	175	225
COMBINED	1,495	1,675	1,825	2,300

1975	1976	1977	1978	1979	1980	1981
			Million Dollars			
18,295	23,860	28,680	33,675	44,500	61,300	85,400
960	1,915	3,780	4,030	4,565	5,575	7,975
5,995	7,575	6,660	5,780	5,775	6,475	7,075
9,240	8,675	3,700	2,950	2,250	3,400	4,950
8,725	6,910	8,290	10,675	11,775	13,475	17,175
3,145	4,500	6,375	6,650	7,235	8,300	8,400
2,160	2,180	2,670	3,240	3,750	5,050	5,200
1,105	1,110	1,425	1,375	1,775	1,950	2,425
49,625	56,725	61,580	68,375	81,625	105,525	138,600
2,325	2,535	3,395	4,035	5,325	7,625	10,600
51,950	59,260	64,975	72,410	86,950	113,150	149,200
9,055	13,135	14,855	17,325	24,150	32,350	50,775
325	325	325	325	450	750	925
3,500	3,625	1,800	750	1,100	1,550	1,025
225	275	500	600	350	600	700
2,100	1,575	1,200	1,750	2,625	3,250	4,600
1,500	2,200	2,500	2,300	2,000	2,400	2,650
650	625	775	950	975	1,300	1,425
370	325	445	475	550	700	900
17,725	22,085	22,400	24,475	32,200	42,900	63,000
1,195	1,375	1,645	1,975	2,600	3,850	5,700
18,920	23,460	24,045	26,450	34,800	46,750	68,700
1,125	1,550	2,900	3,200	4,300	5,900	5,575
150	150	125	150	225	300	200
160	135	350	135	125	150	175
410	325	375	400	175	250	625
70	75	125	125	75	100	475
175	175	175	165	150	175	275
120	45	75	65	150	200	250
2,210	2,455	4,125	4,240	5,200	7,075	7,575
200	250	450	500	700	825	925
2,410	2,705	4,575	4,740	5,900	7,900	8,500

SCHEDULE 4 CAPITAL AND EXPLORATION EXPENDITURES *(Continued)*

	1971	1972	1973	1974
	Million Dollars			
VENEZUELA				
Crude Oil and Natural Gas	210	150	200	290
Natural Gas Liquids Plants	5	5	5	15
Pipe Lines	10	5	5	10
Refineries	45	30	10	20
Chemical Plants	0	0	0	0
Marketing	5	0	0	0
Other	5	5	0	0
Total Capital Expenditures	280	195	220	335
Geological & Geophysical Expense and Lease Rentals	30	25	25	30
COMBINED	310	220	245	365
OTHER WESTERN HEMISPHERE				
Crude Oil and Natural Gas	525	550	575	925
Natural Gas Liquids Plants	5	0	50	50
Pipe Lines	220	175	75	260
Refineries	650	475	550	1,025
Chemical Plants	75	15	20	100
Marketing	150	125	100	125
Other	100	60	65	50
Total Capital Expenditures	1,725	1,400	1,435	2,535
Geological & Geophysical Expense and Lease Rentals	75	75	75	150
COMBINED	1,800	1,475	1,510	2,685
WESTERN EUROPE				
Crude Oil and Natural Gas	500	650	1,300	2,375
Natural Gas Liquids Plants	75	50	25	40
Pipe Lines	150	400	350	475
Refineries	1,400	1,500	1,550	2,250
Chemical Plants	800	800	600	850
Marketing	1,000	825	800	750
Other	225	225	200	180
Total Capital Expenditures	4,150	4,450	4,825	6,920
Geological & Geophysical Expense and Lease Rentals	75	125	175	225
COMBINED	4,225	4,575	5,000	7,145

1975	1976	1977	1978	1979	1980	1981
			Million Dollars			
240	250	375	700	800	1,000	1,450
10	40	5	5	15	25	200
0	15	10	20	25	75	25
15	10	40	175	425	675	600
0	0	0	0	10	25	50
10	5	20	25	25	75	75
15	15	30	60	25	50	50
290	335	480	985	1,325	1,925	2,450
30	10	50	60	200	400	450
320	345	530	1,045	1,525	2,325	2,900
950	1,175	1,100	1,900	2,650	3,650	5,250
75	75	200	250	325	325	700
625	750	425	1,550	1,200	825	725
1,250	1,100	1,050	1,000	1,175	1,050	1,175
150	475	950	1,075	1,375	1,225	1,150
150	150	175	225	250	250	300
75	100	200	175	125	200	225
3,275	3,825	4,100	6,175	7,100	7,525	9,525
150	125	150	200	300	450	600
3,425	3,950	4,250	6,375	7,400	7,975	10,125
3,600	4,200	5,275	5,975	7,200	10,500	10,300
50	50	225	200	350	400	400
1,000	1,100	875	950	700	550	750
2,350	1,450	2,000	2,500	2,525	2,950	3,075
1,100	1,200	1,300	1,500	1,600	1,800	1,250
700	725	875	1,100	1,400	2,125	1,850
250	225	325	250	300	300	325
9,050	8,950	10,875	12,475	14,075	18,625	17,950
300	325	450	475	550	750	1,025
9,350	9,275	11,325	12,950	14,625	19,375	18,975

SCHEDULE 4 CAPITAL AND EXPLORATION EXPENDITURES *(Continued)*

	1971	1972	1973	1974
	Million Dollars			
AFRICA				
Crude Oil and Natural Gas	525	500	500	750
Natural Gas Liquids Plants	135	100	125	140
Pipe Lines	80	90	55	50
Refineries	100	200	165	150
Chemical Plants	5	0	5	25
Marketing	100	100	100	75
Other	30	15	25	25
Total Capital Expenditures	975	1,005	975	1,215
Geological & Geophysical Expense and Lease Rentals	150	175	125	150
COMBINED	1,125	1,180	1,100	1,365
MIDDLE EAST				
Crude Oil and Natural Gas	450	500	850	975
Natural Gas Liquids Plants	25	10	5	25
Pipe Lines	65	140	130	120
Refineries	125	225	300	450
Chemical Plants	40	25	30	40
Marketing	25	25	25	25
Other	95	50	50	135
Total Capital Expenditures	825	975	1,390	1,770
Geological & Geophysical Expense and Lease Rentals	50	50	50	50
COMBINED	875	1,025	1,440	1,820
FAR EAST				
Crude Oil and Natural Gas	400	650	700	1,075
Natural Gas Liquids Plants	100	75	75	125
Pipe Lines	50	60	85	70
Refineries	1,175	1,300	950	1,650
Chemical Plants	100	50	80	125
Marketing	600	500	450	400
Other	75	65	70	80
Total Capital Expenditures	2,500	2,700	2,410	3,525
Geological & Geophysical Expense and Lease Rentals	150	200	225	225
COMBINED	2,650	2,900	2,635	3,750
FOREIGN FLAG TANKERS	2,750	3,650	6,450	8,700

1975	1976	1977	1978	1979	1980	1981
			Million Dollars			
825	1,000	950	1,275	1,650	2,300	3,450
175	200	600	900	1,000	800	1,200
250	525	525	625	550	575	1,250
250	375	900	1,175	800	750	1,125
50	150	300	400	500	575	725
100	125	175	200	225	225	275
25	50	100	75	75	50	75
1,675	2,425	3,550	4,650	4,800	5,275	8,100
200	175	300	375	350	500	800
1,875	2,600	3,850	5,025	5,150	5,775	8,900
1,000	1,375	1,925	1,550	1,700	2,450	3,500
25	675	1,400	1,500	1,650	2,500	3,700
350	1,250	2,150	1,400	1,550	2,200	2,500
400	925	1,250	2,050	2,100	2,350	3,125
50	150	900	1,000	1,200	1,750	1,350
25	25	50	50	100	125	200
175	275	125	100	125	150	250
2,025	4,675	7,800	7,650	8,425	11,525	14,625
50	75	125	150	175	200	250
2,075	4,750	7,925	7,800	8,600	11,725	14,875
1,500	1,175	1,300	1,750	2,050	3,150	5,100
150	400	900	700	550	475	650
110	175	525	350	525	550	625
1,950	1,150	1,475	1,625	1,950	2,200	2,850
225	250	300	250	475	425	750
350	350	425	525	625	775	800
75	75	125	175	425	300	350
4,360	3,575	5,050	5,375	6,600	7,875	11,125
200	200	225	300	450	650	850
4,560	3,775	5,275	5,675	7,050	8,525	11,975
9,015	8,400	3,200	2,350	1,900	2,800	4,250

SCHEDULE 5 EXPLORATION AND DEVELOPMENT EXPENDITURES – UNITED STATES – 1971 – 1981

(Excludes Natural Gas Liquids Plants)

	1971	1972	1973
	Million Dollars		
Lease Acquisitions – Onshore	200	200	500
Lease Acquisitions – Offshore	100	2,275	3,100
Total	300	2,475	3,600
Producing Wells	2,095	2,330	2,705
Dry Holes	790	935	985
Total Capitalized	3,185	5,740	7,290
Geological & Geophysical Expense	575	575	675
Lease Rentals	140	165	175
Total Exploration & Development Expenditures	3,900	6,480	8,140

	1974	1975	1976	1977
Lease Acquisitions – Onshore	700	500	600	650
Lease Acquisitions – Offshore	5,100	1,200	2,275	1,675
Total	5,800	1,700	2,875	2,325
Producing Wells	3,975	5,515	8,055	9,645
Dry Holes	1,450	1,840	2,205	2,885
Total Capitalized	11,225	9,055	13,135	14,855
Geological & Geophysical Expense	925	980	1,150	1,400
Lease Rentals	205	215	225	245
Total Exploration & Development Expenditures	12,355	10,250	14,510	16,500

	1978	1979	1980	1981
Lease Acquisitions – Onshore	700	800	1,025	1,650
Lease Acquisitions – Offshore	1,850	4,600	5,100	7,000
Total	2,550	5,400	6,125	8,650
Producing Wells	10,875	13,600	19,350	30,700
Dry Holes	3,900	5,150	6,875	11,425
Total Capitalized	17,325	24,150	32,350	50,775
Geological & Geophysical Expense	1,700	2,275	3,425	5,100
Lease Rentals	275	325	425	600
Total Exploration & Development Expenditures	19,300	26,750	36,200	56,475

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